



PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 28 JUN 2005
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Applicant's or agent's file reference XA1818		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/GB2004/003272		International filing date (day/month/year) 28.07.2004	Priority date (day/month/year) 21.08.2003	
International Patent Classification (IPC) or national classification and IPC H01Q15/00, H01Q17/00				
Applicant AMS LIMITED ET AL.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 30.05.2005		Date of completion of this report 28.06.2005		
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Moumen, A Telephone No. +31 70 340-4411 		

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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/003272

Box No. I Basis of the report

1. ~~With regard to the language, this report is based on the international application in the language in which it was~~
filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language ,
which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-6 as originally filed

Claims, Numbers

1-10 received on 30.05.2005 with letter of 25.05.2005

Drawings, Sheets

1/1 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/003272

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4,5,7-9
	No: Claims	1-3,6,10
Inventive step (IS)	Yes: Claims	
	No: Claims	4,5,7-9
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 5 204 680	(Racal Defence)	20 April 1993
D2: US 4 118 704	(TDK Electronics)	3 October 1978
D3: US 5 057 842	(Vegla)	15 October 1991

1. The document D1 discloses (the references in parentheses applying to this document):

an apparatus (Fig. 1) for reducing the electromagnetic radiation reflected from at least one object in the direction of at least one electromagnetic radiation receiver (column 1, line 43- line 47), the apparatus comprising an array, located between each object and receiver for reflecting and dispersing incident electromagnetic radiation away from each receiver, the array having a plurality of substantially reflective panels, wherein the panels are arranged at different angles to the plane of the array (Fig. 6, column 6, lines 41-52, column 1, lines 17-21).

Contrary to the applicant opinion, the objective problem solved by the document D1 can be seen as how to reduce the electromagnetic radiation reflected from one or more objects in directions of one or more receivers (known in this art as RCS reduction)) over a band of frequencies (cf. column 1, line 52, " This allows operation over a wide signal frequency band", column 6, lines 41-46, "... respond to the detected frequency ..."). Hence, the document D1 solves the same problem as in the current application.

The subject-matter of claim 1 and corresponding method claim 10 is therefore not new (Article 33(2) PCT).

2. Document D1, which is considered to represent the most relevant state of the art,

~~discloses (cf. Fig.1) an apparatus according to claim 1 from which the subject-matter~~
of claim 5 differs in that at least one of the panels is absorptive to electromagnetic radiation.

However, these features have already been employed for the same purpose in a similar apparatus, see document D2, Fig. 10. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to an apparatus according to document D1, thereby arriving at an apparatus according to claim 5. The subject-matter of claim 5 does therefore not involve an inventive step (Articles 33(3)).

3. Dependent claims 2-4 and 6-9 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step as the relevant subject matter is either disclosed in the cited documents or falls within the knowledge and ability of the skilled person.

Re Item VII

Certain defects in the international application

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D3 is not mentioned in the description, nor are these documents identified therein.

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CLAIMS

- ~~1. Apparatus for reducing the electromagnetic radiation reflected from at~~
least one object in the direction of at least one electromagnetic radiation receiver, the apparatus comprising:-
- 5 an array located between each object and receiver for reflecting and dispersing incident electromagnetic radiation away from each receiver, the array having a plurality of substantially reflective panels, characterised in that the panels are arranged at different angles to the plane of the array.
- 10 2. Apparatus according to Claim 1, wherein the array is attached to an outer surface of each object.
3. Apparatus according to Claim 1 or 2, wherein at least one of the panels is made of material substantially reflective to electromagnetic radiation.
4. Apparatus according to Claim 1 or 2, wherein at least one of the panels
15 comprises a substrate having a substantially reflective coating.
5. Apparatus according to any of the preceding claims, wherein at least one of the panels is substantially absorptive to electromagnetic radiation.
6. Apparatus according to any of the preceding claims, wherein at least one of the panels is generally planar.
- 20 7. Apparatus according to Claims 1 to 5, wherein at least one of the panels is generally curved.
8. Apparatus according to any of the preceding claims, wherein at least one of the panels is irregular in shape.
9. Apparatus according to any of the preceding claims, wherein at least one
25 of the panels has a substantially reflective multi-faceted surface.
10. A method for reducing the electromagnetic radiation reflected from at least one object in the direction of at least one electromagnetic radiation receiver, the method comprising the steps of:

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- i) determining the direction of each electromagnetic radiation receiver from each object;

- ii) providing an array having a plurality of substantially reflective panels between each object and receiver; and
- 5 iii) arranging the panels to reflect and disperse incident electromagnetic radiation away from each receiver;

characterised in that step iii) includes arranging the panels at different angles to the plane of the array.

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